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Verticicladus hainanensis, a new aquatic hyphomycete

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Abstract —*Verticicladus hainanensis*, isolated from decaying leaves in Jianfengling Nature Reserve, Hainan Province, China, is described and illustrated. It is characterized by fusoid, 5–8-septate, slightly grey to dark fuliginous conidia.

Key words —fungal diversity, morphology, freshwater fungi, taxonomy

Introduction

The fungal genus *Verticicladus* is characterized by rhexolytic conidial liberation from conidiogenous cells verticillately fasciculated on short cylindrical conidiophores (Matsushima 1993). Two species have been described, *V. amazonensis* Matsush. and *V. subiculifer* Matsush. (Matsushima 1993, 1996).

China has an enormous fungal diversity occurring on dead branches, rotten submerged wood, and leaves. Many anamorphic fungi collected in southern China have been published recently (Zhang et al. 2009a,b,c, 2011, 2012; Ma et al. 2010, 2011a,b, 2012a,b; Wang et al. 2011; Ren et al. 2011, 2012). A species isolated from decaying leaves in a small river from Jianfengling Nature Reserve, Hainan Province, China had the characteristics of the genus *Verticicladus* but differed from the two described species. Here, the new species is described and illustrated in detail.

Materials & methods

The culture was isolated from dicotyledonous leaves submerged in a river in Hainan. The rotten leaves were scissored to several 2–4 × 2–4 cm sized fragments and then spread on to the surface of CMA (20 g cornmeal, 18 g agar, 40 mg streptomycin,

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30 mg ampicillin, 1000 ml distilled water) medium for ten days; single conidia were isolated using sterilized needles while viewing with a BX51 microscope, and cultivated on CMA in Petri plates. Morphological observations were made from CMA after incubation at 28°C for one week; pure cultures and a permanent slide were deposited in the Herbarium of the Laboratory for Conservation and Utilization of Bio-resources, Yunnan University, Kunming, Yunnan, P.R. China (YMF; formerly Key Laboratory of Industrial Microbiology and Fermentation Technology of Yunnan).

Taxonomy

Verticicladus hainanensis M.T. Guo & Z.F. Yu, **sp. nov.** Plate 1

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Differs from *Verticicladus amazonensis* by its shorter, fusiform conidia and from *V. subiculifer* by its attenuate conidia.

Type: PR China, Hainan Province, Jianfengling Nature Reserve, Chinese Academy of Science, 18°44′N 108°49′E, elev. 682 m, in a river on submerged leaves of an unidentified dicotyledonous plant, 23 June 2011, G. Z. Yang (**holotype,** YMF1.04024 [dried agar culture]; permanent slide, YMF1.040241; ex-type cultures, YMF1.040242).

Etymology: *hainanensis* refers to the province in which the species was found.

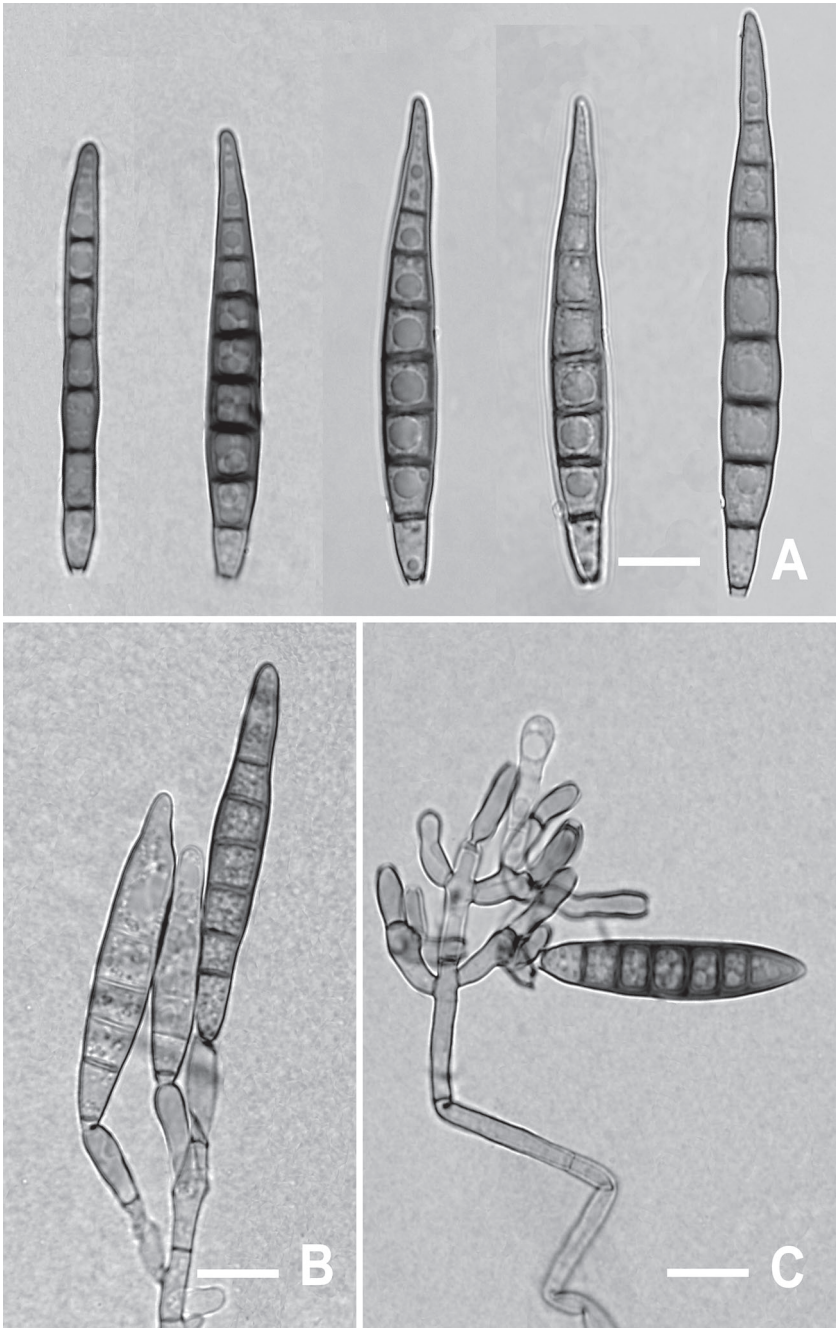
Colonies growing moderately on CMA, attaining about 15 mm diam. after 7 days cultivation on CMA at 28°C. Colony effuse, dark olive to fuliginous, mycelium partly superficial, partly immersed in substratum, composed of branched, septate, smooth hyphae. Vegetative hyphae 1.9–3.8 µm wide, often 2.5–3.5 µm wide, hyaline to fuliginous. Conidiophores arising laterally on hyaline vegetative hyphae, cylindrical with the apical part rounder, 6.75–9.65 × 2.35–3.5 µm, hyaline to slightly grey. Conidiogenous cells cylindrical, with obvious truncations at the apex, 5.9–14.4 × 2.1–3.7 µm, slightly grey, attaching directly on the terminal part of hyphae, solitary or on the conidiophores in aggregates of 3 or more. Conidia fusoid, conspicuously attenuated from the mid-part to the apex, slightly grey to dark fuliginous, smooth at surface, 37.55–65.15 × 4.2–7.6 µm, 5–8-septate, often 7-septate, thick-walled, with rhexolytic liberation from conidiogenous cells.

Discussion

Verticicladus hainanensis fits well within the genus *Verticicladus* based on its conidiogenous cells that are verticillately fasciculate on short cylindrical conidiophores and the multiseptate conidia with rhexolytic liberation from conidiogenous cells.

Verticicladus hainanensis is similar to *V. amazonensis*, which differs by its longer, cylindrical conidia (45–95 µm; Matsushima 1993); and *V. subiculifer*

Plate 1. *Verticicladus hainanensis* (holotype, YMF1.04024). A. Conidia; B. Conidiogenous cells and conidia, C. Conidiophores and a conidium. Scale bars: A–C = 10 µm.


A
B
C

differs from *V. hainensis* by the different shape of its similar sized, cylindro-fusiform conidia lacking any obvious apical attenuation (Matsushima 1996).

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